

WHAT IS CLAIMED IS:

- 1 1. A syringe comprising:
2 a chamber for receiving a plunger of an actuator, the plunger being
3 movable axially with respect to the chamber when the actuator is operated;
4 a connector to be fixed relative to the chamber and to facilitate
5 entry of the plunger into the chamber, and
6 a viscoselective high pressure seal associated with the plunger.
- 1 2. The syringe of claim 1, wherein the connector includes an advancement
2 mechanism movable between first and second positions to engage with and
3 disengage from the actuator for providing for both incremental advancement
4 of the plunger in the chamber, and free axial movement thereof, respectively.
- 1 3. The syringe of claim 1, wherein a distal tip portion of the plunger
2 comprises a seal member therearound so sized for its radially outwardly
3 directed surface to assuredly sealingly engage an inside surface of the
4 chamber during an application procedure but be movable therealong during
5 actuation of the plunger.
- 1 4. The syringe of claim 3, wherein at least one relatively small aperture
2 extends longitudinally within the plunger tip portion from distally of the seal
3 member to proximally thereof, passing under the seal member, the aperture
4 being sufficiently small to effectively inhibit passage of viscous material
5 therealong and define an air escape vent.
- 1 5. The syringe of claim 3, wherein the seal member is an O-ring of material
2 having a limited resilience.

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1 6. The syringe of claim 3, wherein the seal member includes air escape
2 vents extending therethrough or therealong.

1 7. The syringe of claim 6, wherein the seal member air escape vents close
2 under compression of the seal member to prevent viscous material to pass
3 therealong.

1 8. The syringe of claim 3, wherein the plunger distal tip portion comprises
2 a circumferential seal seat just proximally of a distal end thereof in which is
3 disposed the seal member.

1 9. The syringe of claim 8, wherein the seal seat has a geometry that
2 provides for escape of air between the seal member and the seat bottom
3 surface.

1 10. The syringe of claim 8, wherein the seal seat permits slight axial
2 movement of the seal member within the seal seat.

1 11. The syringe of claim 8, wherein small vents extend longitudinally from
2 distally of the seal member to proximally thereof prior to the seal member
3 being urged to a most proximal position by viscous material during actuation
4 of the plunger.

1 12. The syringe of claim 8, wherein the seal seat is knurled to provide a
2 pattern of grooves defining air escape vents.

1 13. The syringe of claim 8, wherein ribs extends axially within the seal seat
2 that are engaged by the seal member's inwardly directed surface, such that
3 gaps between the ribs define air escape vents.

1 17. A syringe comprising:

2 a chamber extending to a distal tip portion and having a proximal
3 end adapted to receive therein an actuator that is movable axially with
4 respect to the chamber;

5 an actuator having a plunger extending to a distal tip portion
6 associated with the chamber distal tip portion, and further having an
7 actuation section at a proximal end of the plunger, wherein the distal tip
8 portion of the plunger is adapted to define a viscoselective high pressure seal
9 with respect to the chamber distal tip portion; and

10 a connector affixable to the chamber for enabling connection of
11 the actuator to the chamber,

12 wherein the plunger distal tip portion comprises a seal member
13 therearound so sized for its radially outwardly directed surface to assuredly
14 sealingly engage an inside surface of the chamber during an application
15 procedure but be movable therealong during actuation of the plunger, and

16 wherein at least one very small aperture extends longitudinally
17 within the plunger tip portion from distally of the seal member to proximally
18 thereof, passing under the seal member, the aperture being sufficiently small
19 to effectively inhibit.

1 18. A syringe comprising:

2 a chamber extending to a distal tip portion and having a proximal
3 end adapted to receive therein an actuator that is movable axially with
4 respect to the chamber;

5 an actuator having a plunger extending to a distal tip portion
6 associated with the chamber distal tip portion, and further having an
7 actuation section at a proximal end of the plunger, wherein the distal tip
8 portion of the plunger is adapted to define a viscoselective high pressure seal
9 with respect to the chamber distal tip portion; and

10 a connector affixable to the chamber for enabling connection of
11 the actuator to the chamber,

12 wherein the plunger distal tip portion comprises a seal member
13 therearound so sized for its radially outwardly directed surface to assuredly
14 sealingly engage an inside surface of the chamber during an application
15 procedure but be movable therealong during actuation of the plunger, and

16 wherein the seal member includes air escape vents extending
17 therethrough or therealong.

1 19. A syringe comprising:

2 a chamber extending to a distal tip portion and having a proximal
3 end adapted to receive therein an actuator that is movable axially with
4 respect to the chamber;

5 an actuator having a plunger extending to a distal tip portion
6 associated with the chamber distal tip portion, and further having an
7 actuation section at a proximal end of the plunger, wherein the distal tip
8 portion of the plunger is adapted to define a viscoselective high pressure seal
9 with respect to the chamber distal tip portion; and

10 a connector affixable to the chamber for enabling connection of
11 the actuator to the chamber,

12 wherein the plunger distal tip portion comprises a seal member
13 therearound so sized for its radially outwardly directed surface to assuredly
14 sealingly engage an inside surface of the chamber during an application
15 procedure but be movable therealong during actuation of the plunger,

16 wherein the plunger distal tip portion comprises a circumferential
17 seal seat just proximally of a distal end thereof in which is disposed the seal
18 member, and

19 wherein the seal seat has a geometry that provides for escape of
20 air between the seal member and the seat bottom surface.

1 20. A syringe comprising:
2 a chamber extending to a distal tip portion and having a proximal
3 end adapted to receive therein an actuator that is movable axially with
4 respect to the chamber;
5 an actuator having a plunger extending to a distal tip portion
6 associated with the chamber distal tip portion, and further having an
7 actuation section at a proximal end of the plunger, wherein the distal tip
8 portion of the plunger is adapted to define a viscoselective high pressure seal
9 with respect to the chamber distal tip portion; and
10 a connector affixable to the chamber for enabling connection of
11 the actuator to the chamber,
12 wherein the plunger distal tip portion comprises a seal member
13 therearound so sized for its radially outwardly directed surface to assuredly
14 sealingly engage an inside surface of the chamber during an application
15 procedure but be movable therealong during actuation of the plunger,
16 wherein the plunger distal tip portion comprises a circumferential
17 seal seat just proximally of a distal end thereof in which is disposed the seal
18 member, and
19 wherein the seal seat permits slight axial movement of the seal
20 member within the seal seat and wherein small vents extend longitudinally
21 from distally of the seal member to proximally thereof prior to the seal
22 member being urged to a most proximal position by viscous material during
23 actuation of the plunger.